

- 1       What is claimed is:
- 2       1. A computer-implemented visualization model of similarity relationships between
- 3            documents comprising:
- 4            performing a similarity search based on at least one attribute of a reference
- 5            document to find at least one target document with similar attributes;
- 6            creating a visual representation of the reference database document and the at
- 7            least one target document;
- 8            creating a visual representation of the similarities between the reference document
- 9            and the at least one target document; and
- 10          displaying the visual representations of the database documents and their
- 11            similarities on a graphical user interface.
- 1        2. The method according to claim 1 wherein the at least one target documents that
- 2            are similarity searched reside in a plurality of databases.
- 1        3. The method according to claim 1 wherein the similarity search returns a result set
- 2            of target documents that are used by the visualization model to create the visual
- 3            representation of the documents and the similarities between the documents.
- 1        4. A computer-implemented interactive visualization model of similarity
- 2            relationships between documents comprising:
- 3            using a similarity search performed on attributes of a reference document which
- 4            results in a set of 0 to n target documents with similar attributes;
- 5            creating a visual representation of the reference document and each target
- 6            document;

7 creating a visual representation of similarities between the reference document  
8 and each target document; and  
9 displaying the visual representation of the reference documents and each target  
10 document and their similarities on a graphical user interface.

1 5. The method of claim 4 further comprising allowing a user using the graphical user  
2 interface to initiate the similarity search and select the attributes of the reference  
3 document to be used in the similarity search.

1 6. The method of claim 4 further comprising allowing a user using the graphical user  
2 interface to choose any attributes of the reference document to be used in the  
3 similarity search.

1 7. The method of claim 6 further comprising using attributes of a target document as  
2 a source for a new similarity search.

1 8. A computer-implemented visualization model of similarities between documents  
2 comprising:  
3 displaying a reference hierarchical object (a reference model node);  
4 allowing a user to initiate a similarity search, based on at least one attribute of the  
5 reference hierarchical object, to find at least one target hierarchical objects (a  
6 target model node);  
7 visually representing the reference model node and the at least one target model  
8 node that meet a similarity search criteria;  
9 visually representing the similarities between the reference model node and each  
10 target model node as a model edge;

11 displaying the visual representations of the model node and model edge on a  
12 graphical user interface.

1 9. The method according to claim 8 wherein the model node comprises:  
2 a reference to the hierarchical object the model node represents;  
3 a reference to at least one attribute of the hierarchical object used in the similarity  
4 search if a model edge exists; and  
5 visual properties of the hierarchical document the model node represents.

1 10. The method according to claim 8 further comprising storing the visual  
2 representation of the reference model node, each target model node, and each  
3 model edge in computer memory or on disk.

1 11. The method according to claim 8 wherein the model edge comprises:  
2 an identifier of the reference model node from which the visual representation of  
3 the model edge will extend and an identifier of the at least one target model node  
4 to which the visual representation of the model edge will extend; and  
5 a list of the similarity search attributes used in the similarity search.

1 12. The method according to claim 11 further comprising user chosen attributes to be  
2 used in the similarity search.

1 13. A computer-implemented method of visualizing similarity relationships between  
2 documents comprising:  
3 using a reference hierarchical document;  
4 performing a similarity search based on user selected attributes of the reference  
5 hierarchical document and determining a result set of target documents  
6 comprising 0 to n hierarchical documents;

7       converting each hierarchical document to a model node that visually represents  
8       each hierarchical document to be displayed on a graphical user interface; and  
9       using the similarity search results, creating a model edge that visually represents  
10      the similarities between the reference hierarchical document and each hierarchical  
11      document in the result set to be displayed on a graphical user interface.

1       14. The method of claim 13 further comprising displaying the model edge, model  
2       node on a graphical user interface.

1       15. The method of claim 8, wherein each model edge indicates a degree of similarity  
2       between the reference hierarchical object and the target hierarchical object is  
3       displayed as a line connecting model nodes, said model nodes are depicted as  
4       geometric shapes on the graphical user interface.

1       16. The method of claim 15, wherein the length of the line connecting the model  
2       nodes varies as a function of the degree of similarity between the reference  
3       document and the target document referenced by the model nodes.

1       17. The method of claim 1, wherein the visual representation is three dimensional.

1       18. A computer-readable medium containing instructions for a visualization model of  
2       similarity relationships between documents comprising:  
3       performing a similarity search based on at least one attribute of a reference  
4       document to find at least one target document with similar attributes;  
5       creating a visual representation of the reference database document and the at  
6       least one target document;  
7       creating a visual representation of the similarities between the reference document  
8       and the at least one target document; and

9 displaying the visual representations of the database documents and their  
10 similarities on a graphical user interface.

1 19. A computer-readable medium containing instructions for a visualization model of  
2 similarities between documents comprising:

3 displaying a reference hierarchical object (a reference model node);  
4 allowing a user to initiate a similarity search, based on at least one attribute of the  
5 reference hierarchical object, to find at least one target hierarchical objects (a  
6 target model node);

7 visually representing the reference model node and the at least one target model  
8 node that meet a similarity search criteria;

9 visually representing the similarities between the reference model node and each  
10 target model node as a model edge;

11 displaying the visual representations of the model node and model edge on a  
12 graphical user interface.